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MODERN RADIATION

SHAW-PERKINS
CONVECTOR-RADIATORS

SHAW-PERKINS MANUFACTURING COMPANY
OLIVER BUILDING • • • PITTSBURGH • PENNA.

CHAS. E. BROWN

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SHAW-PERKINS CONVECTOR-RADIATORS

for

Residential, Commercial, Industrial
and Marine Heating Systems

The first section of this catalog is devoted to a discussion of the SHAW CONVECTOR-RADIATOR. In the second section is presented the same information relative to the PERKINS unit.

SHAW-PERKINS MANUFACTURING COMPANY
OLIVER BUILDING, PITTSBURGH, PENNSYLVANIA



The SHAW CONVECTOR-RADIATOR

A New and Pleasing Design of Exposed Heating Unit

THE SHAW convector-radiator is an attractive, self-contained unit, requiring no cabinet or expensive recessing. It occupies very little floor space and is *designed* to harmonize with modern decorating.

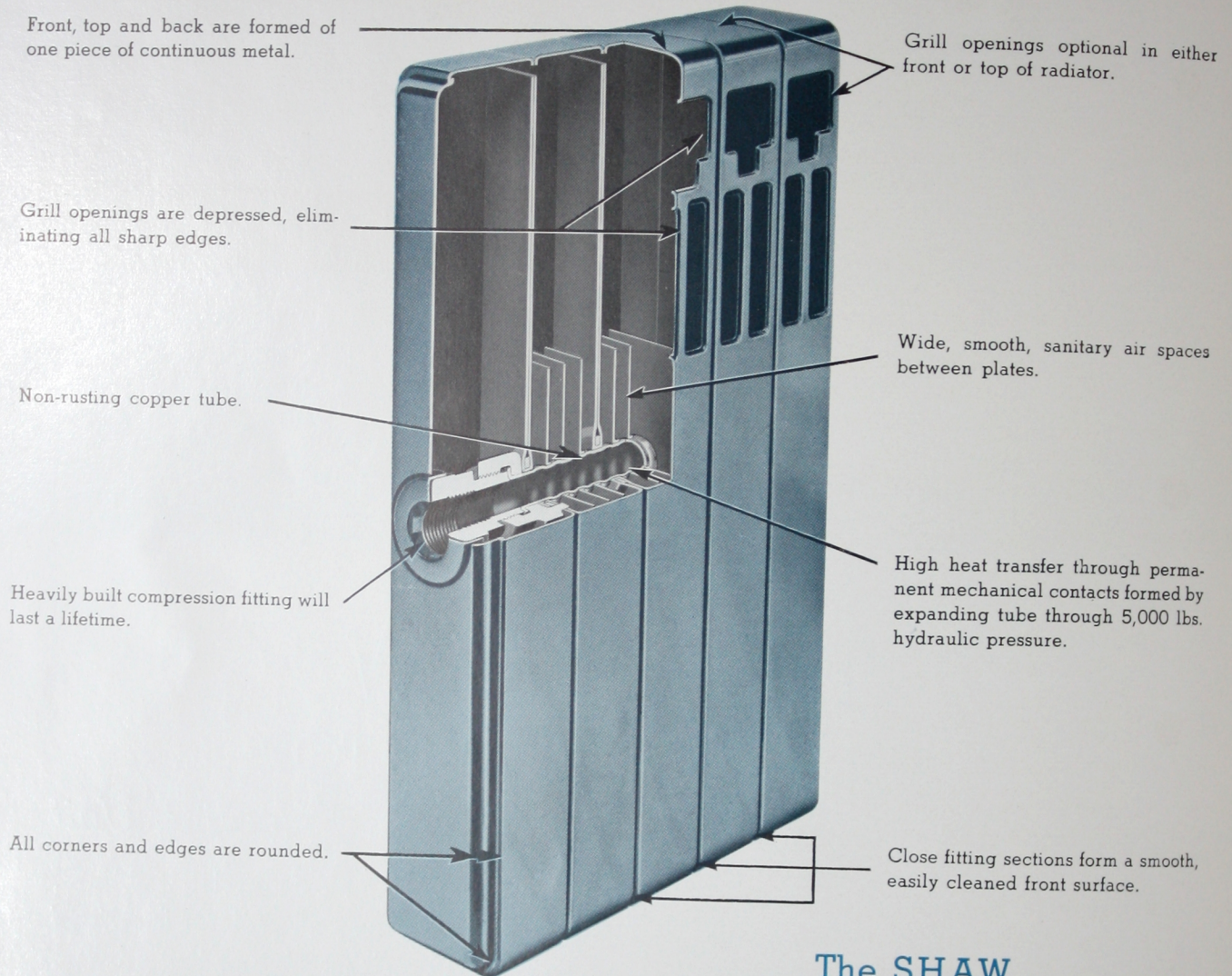
For the first time it is now possible to secure these features and in addition a well balanced engineering combination of radiated and convected heat. The sectional type assembly permits unusual latitude in the selection of a suitable size for the smallest cabin aboard ship or for the largest exposed living or working quarters

of residential and commercial buildings.

The SHAW convector-radiator is *designed* to operate on either high or low pressure steam as well as hot water. Frequently this high pressure steam feature alone justifies the selection of The SHAW for with such an installation smaller heating units and piping are required resulting in considerable installation and operating savings.

Typical installations, cross sectional views and heat emission tables are carefully arranged on the following pages of this bulletin to facilitate the selection of information that will be most helpful.

DESIGN AND CONSTRUCTION

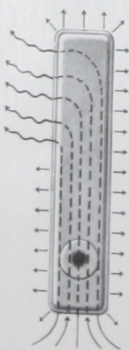


The SHAW CONVECTOR-RADIATOR

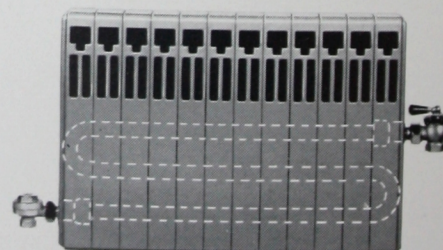
THE SHAW CONSTRUCTION

THIS ADVANCED HEATING UNIT embodies a heavy, internal copper tube in contact with steel radiating fins so designed as to form a self-contained cabinet and grille. The positive mechanical bond between all metal surfaces provides a highly efficient and permanent heat conducting contact.

The heat from the steam or hot water contained in the copper tube is conducted through all the steel radiating fins over which large quantities of low temperature air pass constantly and join with the radiant heat from the exposed metal surfaces to produce a quick and economical form of comfortable warmth.



THE CONTINUOUS COPPER TUBE



COMPARE These 8 Features

1 ELIMINATES RECESSING

The attractive, self-contained SHAW convector-radiator requires no recessing. There is no necessity of special pocket framing or grille work as with other units. No construction delays waiting for roughing in dimensions. No expensive construction changes if enlargement of heating system is desired. For the same reasons The SHAW is an excellent selection in re-modelling.

2 EFFICIENT CONVECTION

Wide air spaces between the smooth surfaced steel fins induce the movement of large volumes of low temperature air thereby assisting in the fast and even distribution of heat throughout the room.

3 HIGH OR LOW PRESSURES

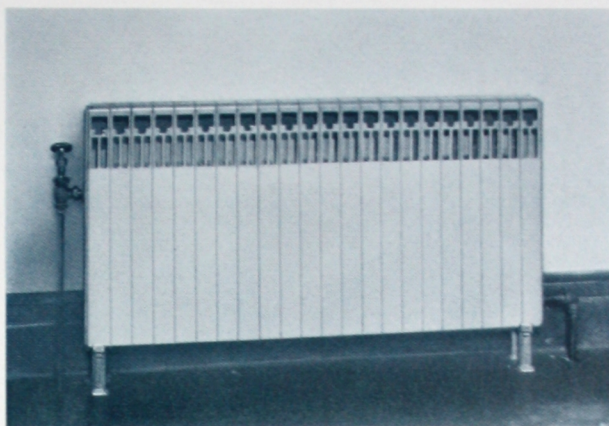
The SHAW convector-radiator has been *designed* to operate on high or low pressure steam or forced circulation hot water. This highly desirable feature appeals particularly to marine and industrial engineers because high pressure steam permits them to employ smaller heating units and less costly installations.

4 TESTED AT 5000 POUNDS

Every SHAW convector-radiator has the heavy copper tube, which contains the steam or hot water, expanded hydraulically at 5,000 pounds pressure to assure a perfect mechanical bond with the steel radiating fins.

5 COMPACT

Where floor space is limited such as in ship cabins, bathrooms, small living or



The above photograph shows the Shaw Radiator, Model A, as it appears when installed.

office rooms, the three inch thinness of the SHAW convector-radiator is frequently in itself a deciding factor.

6 LIGHT WEIGHT

The SHAW convector-radiator, because of its high heat output, combines sturdy construction with a weight less than half that of an ordinary exposed radiator of the same capacity.

7 SANITARY

The SHAW convector-radiators have a smooth, easily cleaned outer surface, and the wide interior air spaces prevent collection of dust. The air spaces in The SHAW are easily vacuumed or blown clean, a desirable feature since dust or other obstructions stop air circulation and reduce heat output.

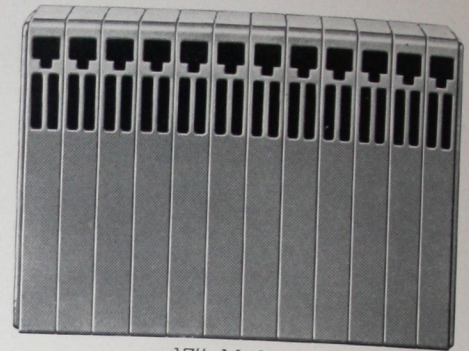
8 NON-RUSTING COPPER TUBE

A heavy copper tube, to contain the heating element, was selected as being most resistant to corrosion. In addition to being mechanically tested under great pressure, every tube is subjected to an exhaustive electrical inspection—an exclusive Shaw-Perkins feature.

SHAW RADIATOR MODEL A

Front Air Outlet

3" WIDE



17" Model A

TABLE OF LENGTHS AND RATINGS

Radiator Ratings Expressed in Sq. Ft. Equivalent Direct Radiation												
No. of Secs.	Length "L" in Inches	14" Height O. E.	14" Height S. E.	17" Height O.E. & S.E.	20" Height O.E. & S.E.	23" Height O.E. & S.E.	No. of Secs.	Length "L" in Inches	14" Height S.E.	17" Height O.E. & S.E.	20" Height O.E. & S.E.	23" Height O.E. & S.E.
5	10½	3.9	5.3	6.4	7.5	8.5	23	46½	26.2	32.0	37.5	42.6
6	12½	4.8	6.5	7.8	9.2	10.4	24	48½	27.4	33.4	39.2	44.5
7	14½	5.7	7.6	9.2	10.8	12.3	25	50½	28.5	34.8	40.9	46.4
8	16½	6.6	8.8	10.6	12.5	14.2	26	52½	29.7	36.2	42.5	48.3
9	18½	7.5	9.9	12.1	14.2	16.1	27	54½	30.9	37.6	44.2	50.2
10	20½	8.4	11.1	13.5	15.8	18.0	28	56½	32.0	39.1	45.9	52.1
11	22½	9.2	12.3	14.9	17.5	19.9	29	58½	33.2	40.5	47.5	54.0
12	24½	10.1	13.4	16.3	19.2	21.8	30	60½	34.4	41.9	49.2	55.9
13	26½	11.0	14.6	17.8	20.8	23.7	31	62½	35.5	43.3	50.9	57.7
14	28½	11.9	15.8	19.2	22.5	25.5	32	64½	36.7	44.7	52.5	59.6
15	30½	12.8	16.9	20.6	24.2	27.4	33	66½	37.8	46.2	54.2	61.5
16	32½	13.6	18.1	22.0	25.8	29.3	34	68½	39.0	47.6	55.9	63.4
17	34½	14.5	19.2	23.4	27.5	31.2	35	70½	40.2	49.0	57.5	65.3
18	36½	15.5	20.4	24.9	29.2	33.1	36	72½	41.3	50.4	59.2	67.2
19	38½	16.3	21.6	26.3	30.9	35.0	37	74½	42.5	51.8	60.9	69.1
20	40½	17.2	22.7	27.7	32.5	36.9	38	76½	43.6	53.3	62.5	71.0
21	42½		23.9	29.1	34.2	38.8	39	78½	44.8	54.7	64.2	72.9
22	44½		25.1	30.5	35.9	40.7	40	80½	46.0	56.2	65.9	74.8

STEAM RATINGS—The Convector Manufacturers' Certified Ratings given in the above table are based on 70° Air and 1 lb. Steam supply. For other air temperatures or steam pressure see table of conversion factors Page 8.

Ratings of Model A Shaw Radiators are practically independent of tapping arrangements except in the 14" height where different ratings are given for O. E. (opposite end) and S. E. (same end) tapping arrangements.

HOT WATER RATINGS—When selecting Shaw Radiators for a hot water system choose a radiator 66% larger than would be used for heating the same space by steam. This rule applies for 70° room air and 185° F. average water temperature. For other air or water temperatures see table of conversion factors Page 8.

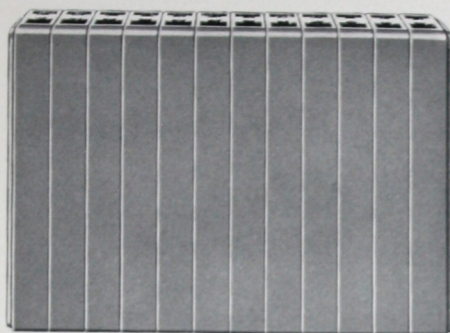
TAPPINGS—Radiators are tapped 1", ¾" or ½" two pipe at same end or opposite ends, as specified, except that the 14" Model A Radiator is not made with O. E. tappings longer than 20 Sections. Tapping arrangement cannot be changed after radiator is manufactured and should be specified on order using tapping location numbers shown on Page 14.

BRACKETS AND LEGS—Radiators can be furnished with either attachable legs or adjustable wall brackets as mentioned on Page 14.

WEIGHT—For estimating purposes allow 2¼ lbs. per sq. ft. of rated output for uncrated Model A Radiator. For crated radiator allow 2¾ lbs. per sq. ft.

PAINT—All radiators are furnished in gray priming coat. For other information see Page 14.

• Use SHAW CONVECTOR-RADIATORS for Long Life •



17" Model B

SHAW RADIATOR MODEL B

Top Air Outlet

3" WIDE

TABLE OF LENGTHS AND RATINGS

Radiator Ratings Expressed in Sq. Ft. Equivalent Direct Radiation											
No. of Secs.	Length "L" in Inches	14" Height	17" Height	20" Height	23" Height	No. of Sec.	Length "L" in Inches	14" Height	17" Height	20" Height	23" Height
5	10 1/2	6.9	7.7	8.4	9.1	23	46 1/2	34.6	38.8	42.0	45.4
6	12 1/2	8.4	9.4	10.3	11.1	24	48 1/2	36.1	40.5	43.8	47.4
7	14 1/2	10.0	11.2	12.1	13.1						
8	16 1/2	11.5	12.9	14.0	15.2	25	50 1/2	37.6	42.2	45.7	49.4
9	18 1/2	13.0	14.6	15.9	17.2	26	52 1/2	39.2	43.9	47.6	51.5
						27	54 1/2	40.7	45.7	49.4	53.5
10	20 1/2	14.6	16.3	17.7	19.2	28	56 1/2	42.3	47.4	51.3	55.5
11	22 1/2	16.1	18.1	19.6	21.2	29	58 1/2	43.8	49.1	53.2	57.5
12	24 1/2	17.7	19.8	21.5	23.2						
13	26 1/2	19.2	21.5	23.3	25.2	30	60 1/2	45.3	50.8	55.0	59.5
14	28 1/2	20.7	23.2	25.2	27.3	31	62 1/2	46.9	52.6	56.9	61.5
						32	64 1/2	48.4	54.3	58.8	63.6
15	30 1/2	22.3	25.0	27.1	29.3	33	66 1/2	49.9	56.0	60.6	65.6
16	32 1/2	23.8	26.7	28.9	31.3	34	68 1/2	51.5	57.7	62.5	67.6
17	34 1/2	25.3	28.4	30.8	33.3						
18	36 1/2	26.9	30.1	32.6	35.3	35	70 1/2	53.0	59.5	64.4	69.6
19	38 1/2	28.4	31.9	34.5	37.3	36	72 1/2	54.5	61.2	66.2	71.6
						37	74 1/2	56.1	62.9	68.1	73.6
20	40 1/2	30.0	33.6	36.4	39.4	38	76 1/2	57.6	64.5	69.9	75.7
21	42 1/2	31.5	35.3	38.2	41.4	39	78 1/2	59.2	66.4	71.8	77.7
22	44 1/2	33.0	37.0	40.1	43.4	40	80 1/2	60.7	68.1	73.7	79.7

STEAM RATINGS—The Convector Manufacturers' Certified Ratings given in the above table are based on 70° Air and 1 lb. Steam supply. For other air temperatures or steam pressure see table of conversion factors Page 8.

Ratings of Model B Shaw Radiators are independent of tapping arrangements.

HOT WATER RATINGS—When selecting Shaw Radiators for a hot water system choose a radiator 66% larger than would be used for heating the same space by steam. This rule applies for 70° room air and 185°F. average water temperature. For other air or water temperatures see table of conversion factors Page 8.

TAPPINGS—Radiators are tapped 1", 3/4" or 1/2" two pipe at same end or opposite ends, as specified. Tapping arrangement cannot be changed after radiator is manufactured and should be specified on order using tapping location numbers shown on Page 14.

BRACKETS AND LEGS—Radiators can be furnished with either attachable legs or adjustable wall brackets as mentioned on Page 14.

WEIGHT—For estimating purposes allow 2 1/2 lbs. per sq. ft. of rated output for uncrated Model B Radiators. For crated radiators allow 3 lbs. per sq. ft.

PAINT—All radiators are furnished in gray priming coat. For other information see Page 14.

SHAW RADIATOR CONVERSION TABLE

Showing Increased Radiator Heat Emission
at Elevated Steam Pressures

Heat emission under various Radiator Steam Pressures and Average Water Temperatures expressed in per cent of the emission of the same radiator when operated on 1 lb. steam and with Room Temperature at 70°F.

Temp. of Air in Room of	20.3'' Vac. or 175° Water	18.5'' Vac. or 185° Water	14.6'' Vac. or 200° Water	7.8'' Vac. or 220° Water	1 lb. Steam or 240° Water	10 lb. Steam or 270° Water	25 lb. Steam or 300° Water	50 lb. Steam	75 lb. Steam	100 lb. Steam
40°	78	93	96	110	127	149	178	211	235	255
50°	70	76	87	102	117	140	167	200	224	245
60°	61	68	79	93	109	131	157	189	213	233
70°	54	60	71	85	100	121	147	179	202	222
80°	46	52	63	76	91	112	138	169	191	211
90°	39	45	55	68	83	103	129	159	181	200
100°	31	37	47	60	75	95	119	149	171	189
110°			40	52	67	86	111	139	160	179
120°					59	79	102	129	150	169

The heat output of any Shaw Radiator under unusual operating conditions can be determined by multiplying its rated output by a percentage selected from the above table. Conversely the necessary rated size of radiator to emit a given amount of heat under special conditions can be determined by dividing the desired heat emission (in equivalent sq. ft.) by the percentage in the table corresponding to actual air and steam conditions.

RADIATOR WATER TEMPERATURES

WHEN Shaw Radiators are used on a hot water heating system that is suitable for operation under pressures in excess of 30 lb., a high water temperature can be used. Under these conditions the radiator sizes are much smaller than are ordinarily needed for hot water service. The above table of conversion factors will enable the engineer to select the correct size of Shaw Radiator to meet special combinations of water and air temperatures.

The ratings of Shaw Radiators in hot water service are based on the average temperature of the water in the radiator. This is necessarily lower than the water temperature in the boiler. For ordinary installations with gravity circulation it may be assumed that the difference between the two temperatures will be 20°F. For hot water heating systems employing forced circulation this difference will be much less, possibly as low as 5°F.

- SHAW CONVECTOR-RADIATORS are Easily Cleaned •

SHAW RADIATOR WATER FRICTION TABLE

Loss in Head in Inches of Water Due
to Water Friction Through Radiators

		SHAW RADIATOR—Model A								SHAW RADIATOR—Model B							
No. of Sec.	Length "L" in Inches	14" Height Tapped O.E. 1 tube	14" Height Tapped S.E. 2 tube	17" Height Tapped S.E. 2 tube	17" Height Tapped O.E. 3 tube	20" Height Tapped O.E. 3 tube	20" Height Tapped S.E. 4 tube	23" Height Tapped S.E. 4 tube	23" Height Tapped O.E. 5 tube	14" Height Tapped O.E. 3 tube	14" Height Tapped S.E. 4 tube	17" Height Tapped S.E. 4 tube	17" Height Tapped O.E. 5 tube	20" Height Tapped O.E. 5 tube	20" Height Tapped S.E. 6 tube	23" Height Tapped O.E. 5 tube	23" Height Tapped S.E. 6 tube
5	11																
6	13																.001
7	15							.001	.001				.001	.001	.001	.001	.002
8	17						.001	.001	.002			.001	.002	.002	.002	.002	.003
9	19					.001	.002	.002	.003	.001	.001	.002	.002	.003	.003	.003	.004
10	21				.001	.002	.002	.003	.004	.001	.002	.002	.003	.004	.004	.004	.005
11	23			.001	.002	.002	.003	.004	.005	.002	.003	.003	.004	.005	.006	.006	.007
12	25		.001	.001	.002	.003	.004	.005	.006	.003	.003	.004	.005	.006	.007	.007	.009
13	27		.002	.002	.003	.004	.005	.006	.008	.003	.004	.005	.007	.008	.009	.009	.011
14	29		.002	.002	.003	.005	.006	.008	.010	.004	.005	.007	.008	.010	.012	.011	.014
15	31		.002	.003	.004	.006	.008	.010	.012	.005	.007	.008	.010	.012	.014	.014	.017
16	33		.002	.003	.005	.007	.009	.012	.015	.006	.008	.010	.012	.015	.017	.017	.020
17	35		.003	.004	.006	.008	.011	.014	.018	.007	.009	.012	.015	.017	.021	.020	.024
18	37		.003	.005	.007	.010	.013	.017	.021	.008	.011	.014	.018	.021	.025	.024	.029
19	39	.001	.004	.006	.008	.012	.016	.020	.025	.010	.013	.017	.021	.024	.029	.028	.034
20	41	.001	.004	.007	.010	.014	.018	.023	.029	.012	.015	.019	.024	.028	.034	.033	.040
21	43		.005	.008	.011	.016	.021	.027	.034	.013	.018	.022	.028	.033	.039	.038	.046
22	45		.006	.009	.013	.018	.024	.031	.039	.015	.021	.026	.032	.038	.045	.044	.053
23	47		.007	.010	.015	.021	.027	.035	.044	.018	.023	.029	.037	.043	.052	.050	.060
24	49		.008	.011	.017	.024	.031	.040	.050	.020	.027	.033	.042	.049	.059	.057	.069
25	51		.009	.013	.019	.027	.035	.045	.057	.023	.030	.038	.047	.055	.067	.065	.078
26	53		.010	.014	.022	.030	.040	.051	.064	.025	.034	.043	.053	.062	.075	.073	.087
27	55		.011	.016	.024	.033	.044	.057	.071	.029	.038	.048	.060	.070	.084	.081	.098
28	57		.012	.018	.027	.037	.050	.064	.080	.032	.042	.053	.067	.078	.094	.091	.109
29	59		.014	.020	.030	.041	.055	.071	.089	.035	.047	.059	.074	.087	.104	.101	.121
30	61		.015	.022	.033	.046	.061	.079	.098	.039	.052	.065	.082	.096	.115	.112	.134
31	63		.017	.024	.037	.051	.067	.087	.108	.043	.057	.072	.090	.106	.126	.123	.148
32	65		.018	.027	.040	.056	.074	.095	.118	.048	.063	.079	.099	.116	.140	.136	.163
33	67		.020	.029	.044	.061	.081	.105	.130	.052	.069	.087	.109	.128	.153	.149	.178
34	69		.022	.032	.048	.067	.089	.114	.143	.057	.076	.095	.119	.140	.167	.163	.195
35	71		.024	.035	.053	.073	.097	.125	.156	.062	.083	.104	.130	.152	.183	.178	.213
36	73		.026	.038	.057	.079	.105	.136	.169	.068	.090	.113	.141	.166	.199	.193	.231
37	75		.028	.042	.062	.086	.114	.147	.184	.073	.098	.123	.153	.180	.216	.210	.251
38	77		.030	.045	.067	.093	.124	.160	.199	.080	.106	.133	.166	.195	.234	.227	.272
39	79		.033	.049	.073	.101	.134	.173	.215	.086	.114	.144	.180	.211	.253	.246	.294
40	81		.035	.052	.079	.109	.145	.186	.232	.093	.124	.155	.194	.227	.273	.265	.317

The above table shows the frictional resistance expressed in inches opposing the flow of water through the various Shaw Radiators. The table can be used in conjunction with published data on frictional resistance of piping to accurately predetermine the necessary pipe sizes for connecting up radiators.

The resistances in the table are all based on radiators operating on an average water temperature of 185°F. and with a reduction between radiator inlet water temperature and outlet water temperature of 35°F. This corresponds to an average radiator water temperature 17½°F.

below boiler temperature. For lower or higher water temperature drops in the radiator the value of the frictional resistance in the above table should be multiplied by the following figures.

Temperature Drop	Multiply by
20°	3.08
30	1.36
40	.76
50	.49
60	.34

TYPICAL INSTALLATIONS

THE INSTALLATION PHOTOGRAPHS on these pages show a few of the many places in which The SHAW and The PERKINS convector-radiators are giving excellent service. For instance in the case of The SHAW note the smooth cleanliness of the outer metal surface; the small amount of floor space occupied and the way in which the design harmonizes with the surroundings of the room. Notice also in the PERKINS installations the rugged good looks, for even in those places where great heat emission is desirable it is no longer necessary to sacrifice appearance. Both units are designed to be in complete harmony with their surroundings.

(Below)—Shaw Radiator, Model B, installed in living room of college dormitory.



(Below)—Shaw Radiator, Model B, installed in wash room of office building.



(Above)—Office installation of Shaw Radiator, Model A.

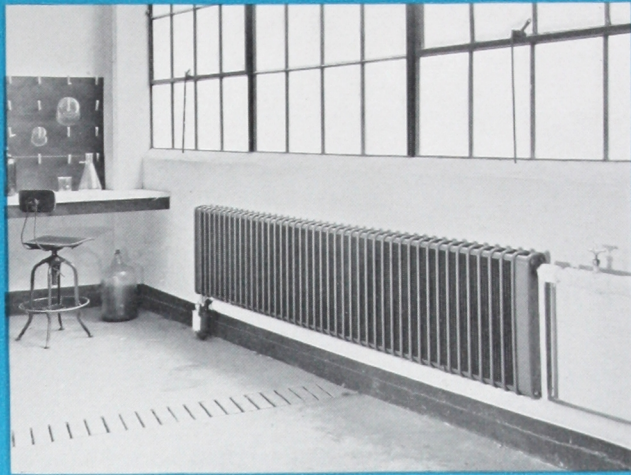


(Above)—Hallway installation of Shaw Radiator, Model B.

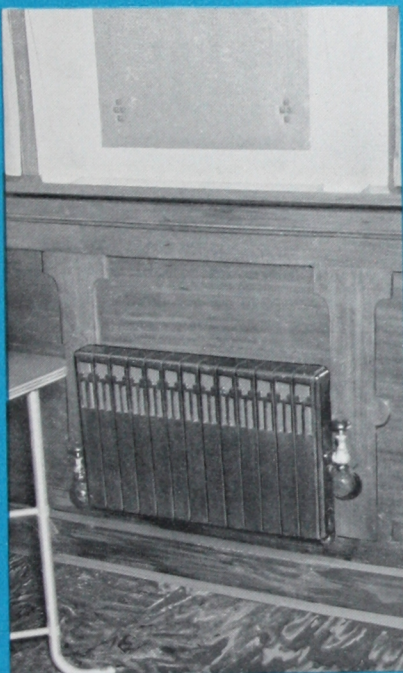
• Use SHAW-PERKINS CONVECTOR-RADIATORS for High or Low Pressure •



(Above left)—Shaw Radiator, Model A, installed in operating room of hospital.



(Above right)—Perkins Radiator installed in laboratory of large chemical plant.



(Left)—Shaw Radiator, Model A, installed in the cafe of a steamship.



(Right)—Shaw Radiator, Model B, installed in lobby of a night club.

(Below Left)—Shaw Radiator, Model B, located in college dormitory study room.



(Below right)—Perkins Radiator, installed in grocery store, showing a typical installation of the Perkins Convector-Radiator Ceiling Model.

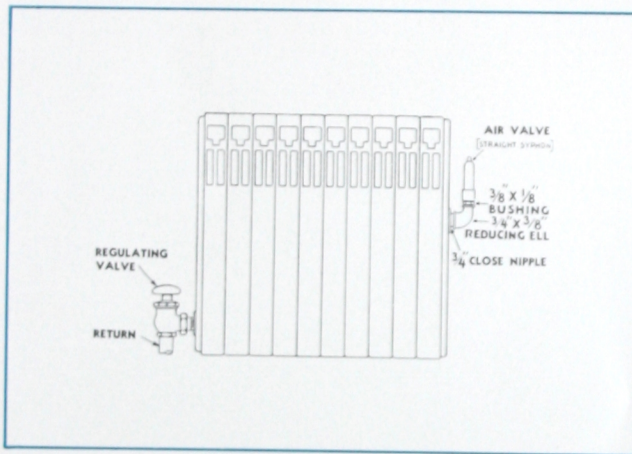


SHAW RADIATOR PIPING CONNECTIONS

ONE PIPE STEAM SYSTEMS

Shaw Radiators will operate excellently on one pipe steam systems. Sizes below 40 sq. ft. can be connected to the steam line at the lower tapping and the air valve installed in the upper tapping. Sizes over 40 sq. ft. should be connected as shown in the lower illustration with a separate condensate return and small trap to insure quiet and satisfactory operation.

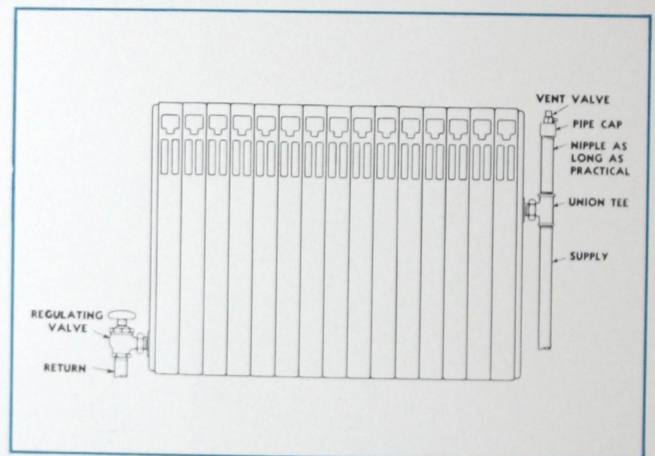
ONE PIPE STEAM PIPING FOR SMALL RADIATOR



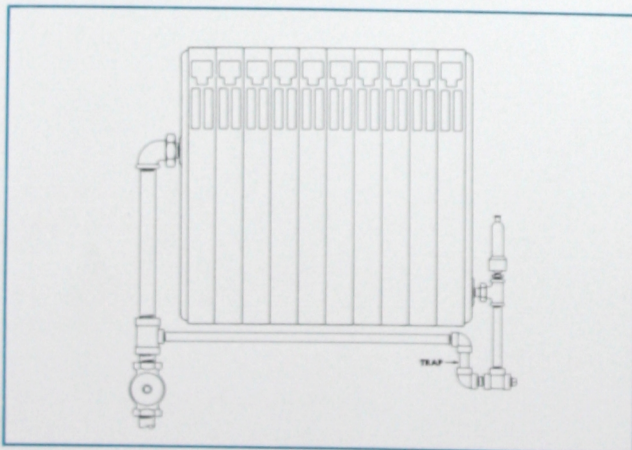
HOT WATER SYSTEMS

Shaw Radiators will operate on either a gravity circulation or forced circulation hot water system. The most essential point in the piping is to provide adequate means for tapping and venting air. The air pocket formed by the pipe nipple should be made as large as conditions and appearance will permit. Installation of automatic air valves for venting radiator is very desirable.

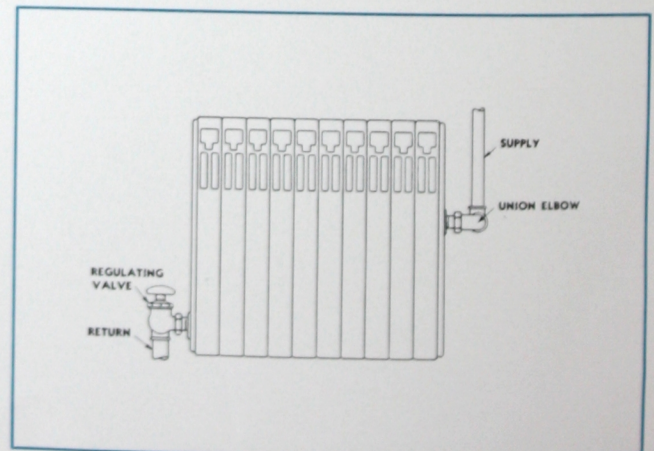
HOT WATER PIPING FOR AIR VENT



ONE PIPE STEAM PIPING FOR LARGE RADIATOR



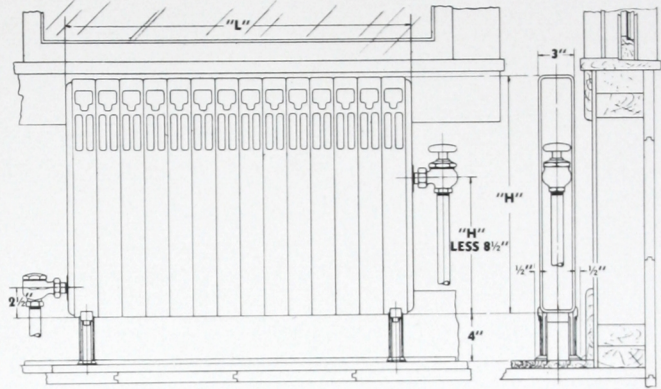
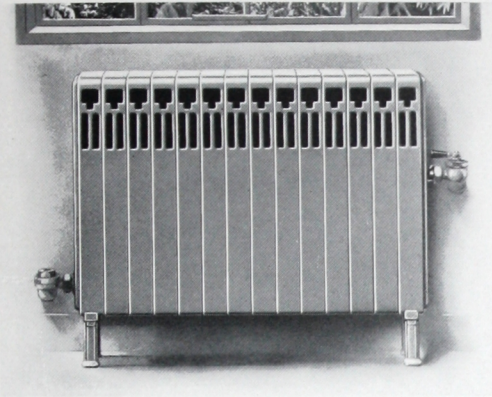
HOT WATER PIPING FOR DOWN FLOW SYSTEM



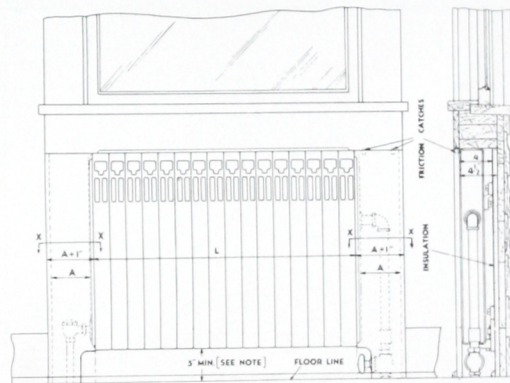
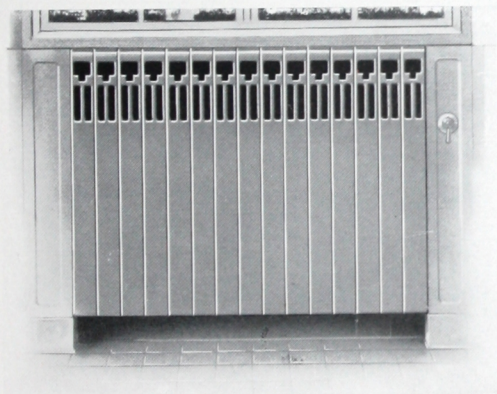
• Use SHAW CONVECTOR-RADIATORS for Economical Operation •

SHAW RADIATOR TYPES OF INSTALLATION

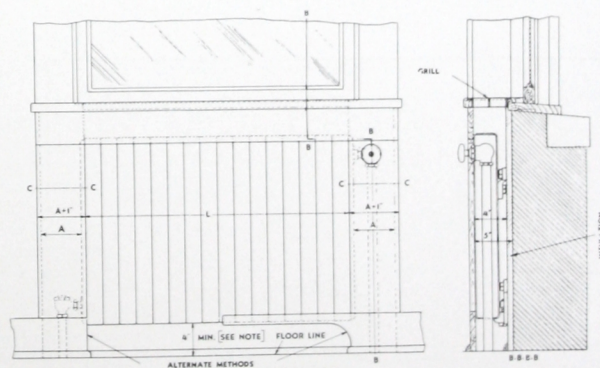
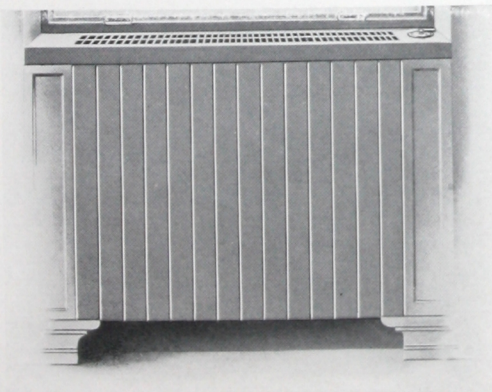
MODEL A EXPOSED



MODEL A RECESSED

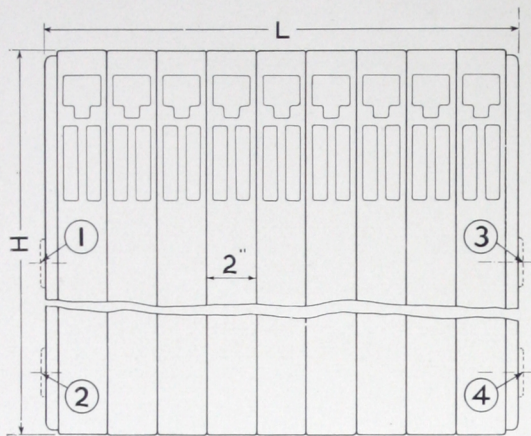


MODEL B RECESSED

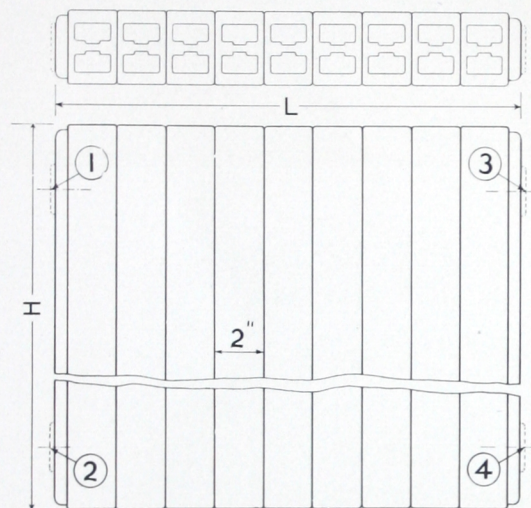


The Shaw Radiator is primarily adapted to fully exposed installations as shown in the upper illustration. However, it can be recessed and two suggested arrangements are shown to facilitate installation when this type of construction is desired.

● Use SHAW CONVECTOR-RADIATORS for Heating Efficiency ●



Front View of Model A
FIG. 1



Front and Top Views of Model B
FIG. 3

MEASUREMENTS

SHAW RADIATOR

Model A

Dimension	14"	17"	20"	23"
A*	4"	4"	4"	4"
B*	5"	5"	5"	5"
C	5"	8"	11"	14"
D	†	6"	9"	12"
H	14"	17"	20"	23"
L	See Page 6			

*Dimensions A and B can be increased or decreased as much as $\frac{1}{2}$ " and any change in one of these dimensions inversely affects the other.

†Dimension D on 14" Model A radiators, when tapped same end, is 3". When tapped opposite ends, tappings are located at (2) and (4).

Model B

Dimension	14"	17"	20"	23"
A*	4"	4"	4"	4"
B*	5"	5"	5"	5"
C	5"	8"	11"	14"
D	9"	12"	15"	18"
H	14"	17"	20"	23"
L	See Page 7			

*Dimensions A and B can be increased or decreased as much as $\frac{1}{2}$ " and any change in one of these dimensions inversely affects the other.

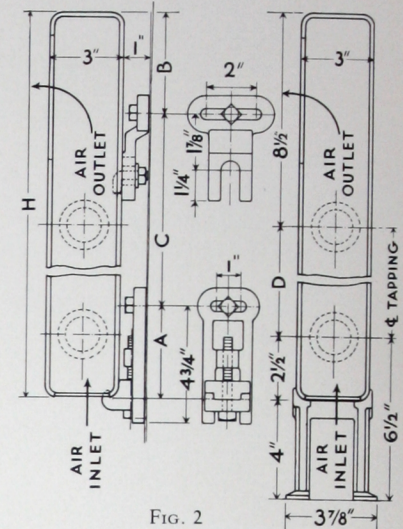


FIG. 2

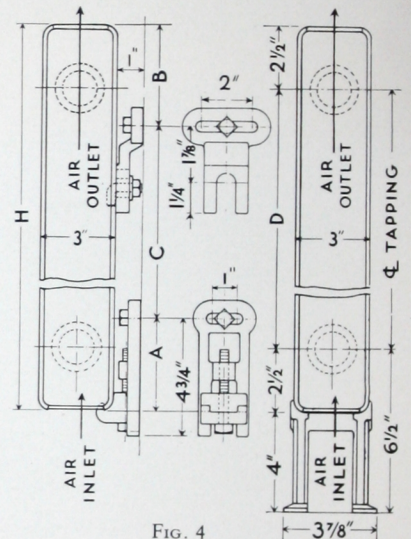
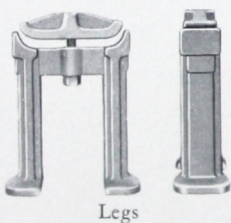


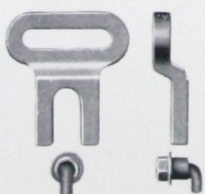
FIG. 4

LEGS AND BRACKETS

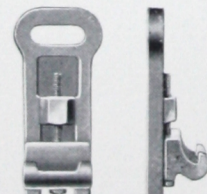


Legs

Shaw Radiators can be furnished with either attachable legs or adjustable wall brackets as illustrated.



Top Wall Bracket



Bottom Wall Bracket

GENERAL INFORMATION

In ordering radiators it is necessary to give tapping instructions by reference to tapping location numbers as shown in circles in above Figures 1 or 3. Radiators are tapped 1", $\frac{3}{4}$ " or $\frac{1}{2}$ " two pipe at same end or opposite ends, as specified, except as noted.

Front and back of radiators are not reversible and the exact tapping locations required for the installation of the radiators should be specified on orders. Tapping locations in finished radiators cannot be changed.

Radiators can be furnished with either attachable legs or adjustable wall brackets, as shown at left.

Top and bottom wall brackets, subject to horizontal adjustment of 2" and 1" respectively, can be located at any horizontal point between the end sections of the radiator, with measurements shown in the figures also applying. The back of each radiator section contains a "knock-out" plug which can be removed for insertion of bolt of top wall bracket.

Top wall bracket can be installed with fingers pointing up, if desired, upon all except 14" high radiators. When so installed dimension B becomes 10" and dimension C is decreased 5" with the $\frac{1}{2}$ " vertical adjustment as above mentioned still applying.

All radiators should be installed in level position. Do not pitch. The vertical screw adjustment in bottom wall bracket aids in leveling of radiator.

All radiators are tested for maximum working pressure of 150 lbs.

All radiators are furnished in gray priming coat.

For additional information address the nearest office.



The PERKINS CONVECTOR-RADIATOR

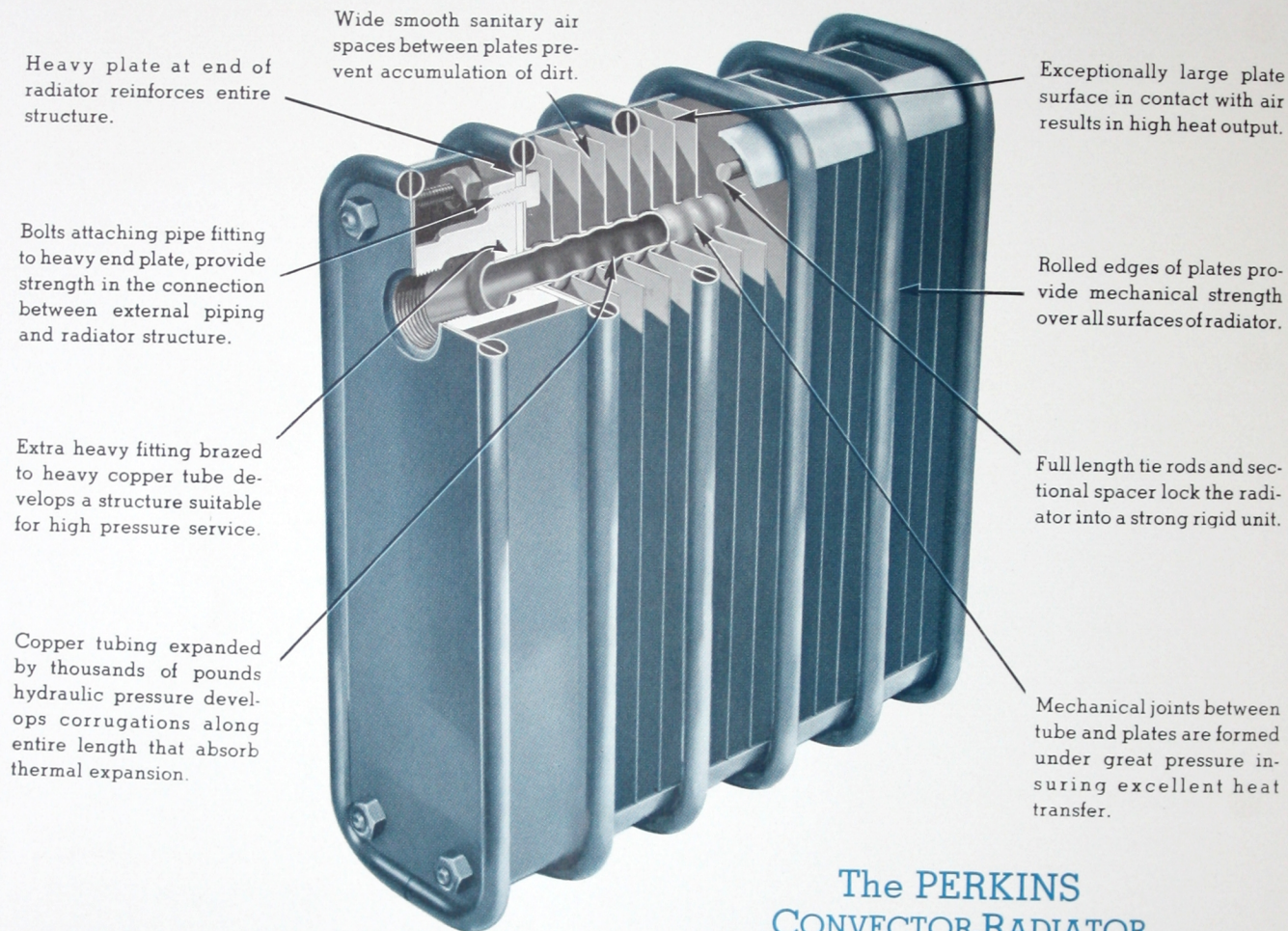
A Modern Industrial Heating Unit for High and Low Pressure Steam or Forced Circulation Hot Water

THE PERKINS convector-radiator is designed to operate in the same efficient manner as the SHAW model with lower initial cost due to elimination of certain refinements not essential to particular fields of application. The PERKINS is a good looking, compact unit consisting of a heavy copper tube hydraulically expanded against steel radiating fins. Large volumes of low temperature air passing over the extended metal surfaces quickly produce a uniform warmth throughout the area to be heated.

This modern industrial convector-radiator merits particular consideration because it is *designed* to operate on high or low pressure

steam or forced circulation hot water. On a basis of comparative weight, unit volume or dimensions, the heat output of The PERKINS exceeds all other types of radiators. Shaw-Perkins engineers have succeeded in designing a new and different compact heating unit that embodies high heat emission and great strength, yet considering these is amazingly light in weight. Whether the contemplated heating is for a garage or the modernization of an entire factory system there is a PERKINS model of the correct size. Conveniently arranged on the following pages are heat emission tables, roughing in dimensions and cross sectional views.

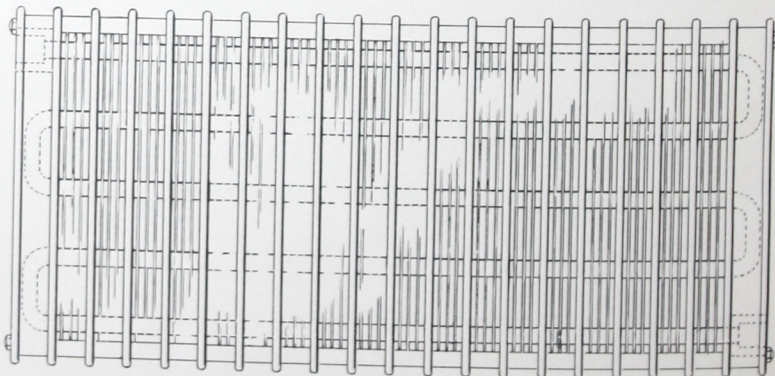
DESIGN AND CONSTRUCTION



THE PERKINS CONSTRUCTION

THIS ADVANCED RADIATOR embodies a heavy copper tube arranged in the form of a continuous coil to which are mechanically bonded a series of steel plates, the whole assembly being locked into a rigid unit by a combination of tie rods and spacers.

Heat from the steam or hot water in the copper tube is conducted through all the steel plates which in turn heat and circulate a large volume of air.



COMPARE These 8 Features

1 AIR MOVEMENT

The PERKINS convector-radiator has been *designed* to move large volumes of low temperature air in order to produce quick, uniform economical heating. The amount of air moved is greater than that of other type radiators.

2 HIGH OR LOW PRESSURES

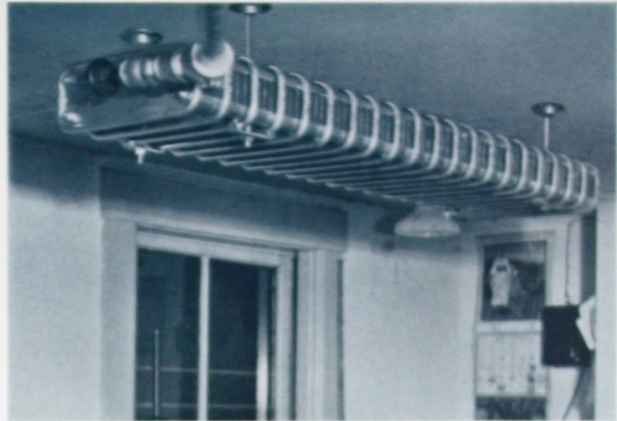
The PERKINS convector-radiator has been *designed* to operate satisfactorily on both high and low pressures. With high pressure steam the heat emission is greatly increased and consequently there is a reduction in the number and size of heating units required, reduction in the size and of course the cost of piping, fewer fittings and less insulation expense.

3 HIGH PRESSURE TESTING

The heavy continuous copper tube in every PERKINS convector-radiator is hydraulically expanded and at the same time tested. This operation is designed to produce a bellows effect the entire length of the tube in order to eliminate the necessity of adding further thermal expansion devices.

4 NON-RUSTING COPPER TUBE

The heating medium in the PERKINS convector-radiator is entirely confined in a heavy, non-rusting copper tube making the installation of one of these units entirely free from the corrosion that attacks less durable metals.



Ceiling mounted installation of the Perkins Convector-Radiator

5 COMPACTNESS

The very compactness of The PERKINS has obsoleted the cumbersome inefficient space consuming radiators of the past. This modern, compact heating unit will produce a given amount of heat with but a fraction of the floor, or ceiling space required by other types of radiators.

6 LIGHT WEIGHT

The weight of the PERKINS Convector-Radiator is less than half that of a conventional exposed radiator of equal output.

7 CEILING INSTALLATIONS

Where ceiling installations are necessary, The PERKINS convector-radiator, considering heat emission, is so light that there is no fear of overloading floors.

8 WIDE SIZE RANGE

For large rooms the wide range of available sizes in the PERKINS permits concentration of units thereby effecting savings on pipe runs, traps and fittings. Even with the largest units there is no danger of leaking at the joints or cracking due to sagging because PERKINS units are shipped as integral units completely assembled and ready for installation.

PERKINS RADIATOR HEAT EMISSION TABLES

For High or Low Pressure Steam and Forced Circulation Hot Water

WALL MOUNTED POSITION																	
No. of Secs.	Length Inches	Weight Lbs.	Radiator Heat Outputs in Sq. Ft. Equivalent Direct Radiation														
			170° Water	180° Water	190° Water	200° Water	220° Water	1 lb. Steam 240° Water	5 lb. Steam 255° Water	10 lb. Steam 270° Water	15 lb. Steam 280° Water	25 lb. Steam 300° Water	50 lb. Steam	75 lb. Steam	100 lb. Steam	125 lb. Steam	150 lb. Steam
			14½" Height														
10	25	46	8	10	11	13	14	16	17	20	21	23	27	29	32	33	34
15	37½	66	13	16	17	19	22	26	28	31	32	36	42	45	50	52	53
20	50	85	18	21	23	26	30	35	38	42	44	49	57	62	67	70	72
25	62½	105	23	27	29	33	38	45	48	53	56	62	72	78	85	89	91
30	75	124	28	32	35	39	46	54	59	64	67	75	87	94	102	107	111
35	87½	144	32	38	41	46	54	64	69	75	79	88	102	111	120	126	130
40	100	164	37	43	48	52	62	73	80	87	91	101	117	128	137	144	150
45	112½	183	42	49	54	59	70	83	90	98	102	114	132	144	155	163	169
50	125	203	47	54	60	66	78	92	100	109	114	127	147	161	172	181	188
23½" Height																	
10	25	72	14	15	17	18	21	26	28	29	31	34	41	44	47	50	51
15	37½	102	22	23	26	29	34	40	44	47	50	55	64	70	75	79	81
20	50	132	29	32	36	39	46	55	60	64	68	75	88	96	102	108	111
25	62½	162	37	41	46	50	59	70	76	81	87	95	112	122	130	137	142
30	75	192	44	49	55	60	71	84	93	99	105	116	135	148	157	166	172
35	87½	222	52	58	65	71	84	99	109	116	123	136	159	173	185	195	203
40	100	252	59	66	74	81	96	114	125	134	142	157	182	200	212	224	233
45	112½	282	67	75	84	92	109	128	141	151	161	177	206	225	240	253	264
50	125	312	74	84	94	102	121	143	157	168	179	197	230	251	267	282	294
32½" Height																	
10	25	92	18	20	22	25	29	35	38	41	43	48	57	62	65	68	72
15	37½	133	28	32	35	39	46	55	60	64	68	75	88	96	102	107	112
20	50	174	38	43	48	53	62	74	81	87	92	102	119	130	138	145	152
25	62½	215	48	54	61	67	79	94	102	110	116	129	150	164	174	183	192
30	75	256	59	66	74	81	95	113	124	133	141	155	181	198	210	222	232
35	87½	296	69	77	86	94	112	133	145	155	165	182	212	232	247	259	272
40	100	337	79	89	99	109	128	152	166	179	189	209	244	266	283	299	312
45	112½	378	89	100	112	122	145	172	188	201	214	236	275	301	319	336	352
50	125	419	99	111	125	136	161	191	209	224	238	263	306	335	356	375	392
CEILING MOUNTED POSITION																	
14½" Height																	
10	25	46	11	13	14	15	18	21	23	25	26	28	34	36	39	41	43
15	37½	66	17	19	22	23	27	33	36	39	41	44	51	57	61	63	66
20	50	85	23	26	29	31	37	44	48	52	55	60	68	76	82	86	90
25	62½	105	29	33	37	39	47	56	61	66	70	76	85	96	104	109	114
30	75	124	35	39	44	48	56	67	73	79	84	92	102	117	125	131	137
35	87½	144	40	46	52	56	66	79	86	93	99	107	119	137	147	154	161
40	100	164	46	52	59	64	76	90	98	106	113	124	136	157	168	176	184
45	112½	183	52	59	67	73	85	102	111	120	128	139	153	177	190	199	208
50	125	203	58	66	74	81	95	113	123	133	142	155	170	197	211	222	232
23½" Height																	
10	25	72	15	19	20	22	26	30	34	36	38	42	50	54	57	60	62
15	37½	102	25	30	32	35	42	49	54	58	61	67	79	86	91	96	100
20	50	132	34	40	44	48	57	67	74	79	84	92	108	118	125	132	137
25	62½	162	43	51	56	61	72	85	94	101	107	117	137	150	159	168	174
30	75	192	53	61	68	74	88	104	113	122	129	142	166	182	193	203	212
35	87½	222	63	72	79	87	103	122	133	144	152	167	195	213	228	239	249
40	100	252	72	82	92	100	119	140	153	165	175	193	225	246	262	275	287
45	112½	282	82	93	103	113	133	159	173	187	198	218	254	277	296	311	324
50	125	312	91	103	115	126	149	177	193	208	221	243	283	309	330	347	361
32½" Height																	
10	25	92	22	25	28	31	37	43	47	51	53	59	69	75	81	85	89
15	37½	133	34	39	43	48	57	67	73	79	83	92	108	117	126	132	138
20	50	174	47	53	59	65	77	91	99	107	113	125	146	159	170	179	187
25	62½	215	59	67	75	82	97	115	125	135	143	158	184	201	214	226	236
30	75	256	72	81	91	99	117	139	152	164	173	191	222	243	259	273	285
35	87½	296	84	95	106	116	138	163	178	191	203	223	261	285	303	320	334
40	100	337	96	109	122	134	158	187	204	220	233	257	299	327	348	367	383
45	112½	378	109	123	137	150	178	211	230	247	262	289	337	369	392	414	432
50	125	419	122	137	153	167	198	235	256	276	292	322	376	411	437	461	481

RATINGS—The Perkins Radiator, with its large plate surface, circulates an extraordinary volume of air producing thereby a highly effective distribution of heat. To avoid installation of unnecessarily large radiators and consequent overheating of the building a conservative 15% increase in rating over strict condensation is included in the above table.

The above table is based on a room temperature of 70°F. If the output in other air temperatures is desired, apply the percentage given in the conversion tables for Shaw Radiators, (page 8) to the rating of the Perkins Radiator in the column headed 1 lb. Steam.

TAPPINGS—Perkins Radiators are tapped 1" and can be bushed ¾" or ½" as specified.

Perkins Radiators are tapped opposite ends only. Front and back of Perkins Radiators are reversible and it is not necessary to specify tapping locations on orders.

BRACKETS AND LEGS—Perkins Radiators can be furnished with wall brackets, ceiling brackets or legs as specified.

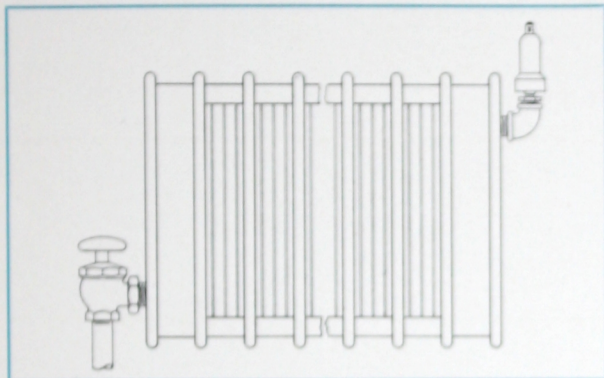
PAINT—All radiators are furnished in gray priming coat.

For other information see Page 20.

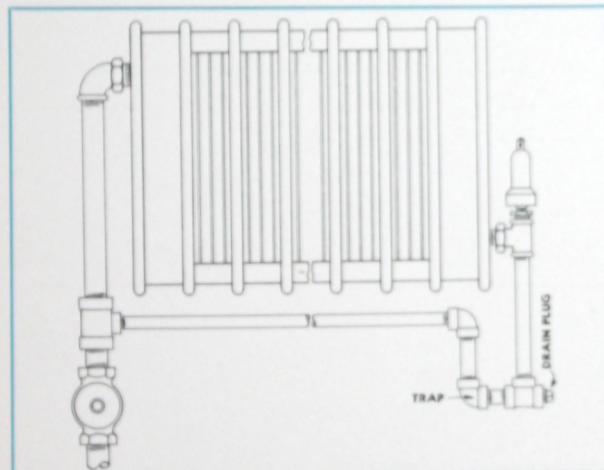
PERKINS RADIATOR PIPING CONNECTIONS

ONE PIPE STEAM SYSTEMS

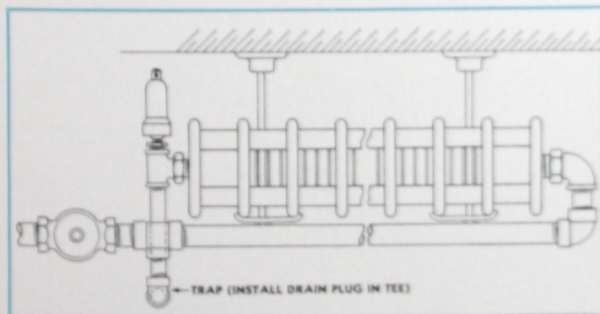
Perkins Radiators will give excellent results on one pipe steam systems when connected as shown below. Separate returns of condensate of large radiators is essential to satisfactory and quiet operation. In these cases a trap in the return line is provided to keep the steam from backing up the return and closing the air valve prior to the complete discharge of air from the radiator. Do not pitch radiator.



Piping for wall or floor radiator sizes under 40 square feet.



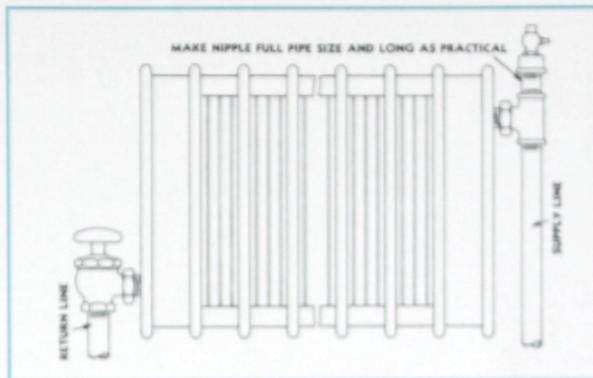
Piping for wall or floor radiator sizes over 40 square feet.



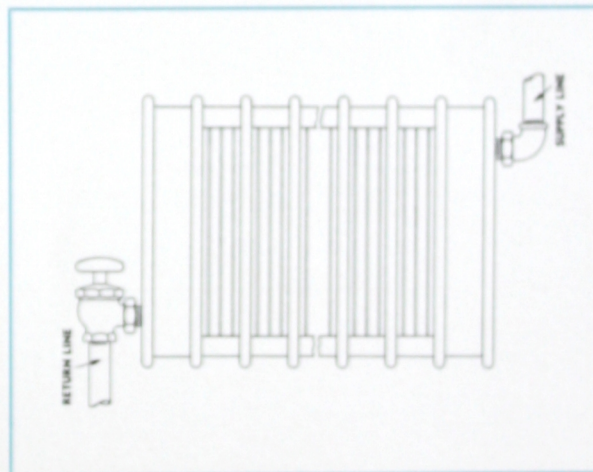
Piping for ceiling mounted radiator all sizes.

HOT WATER SYSTEMS

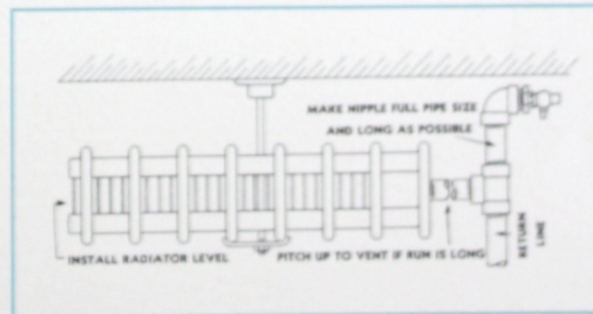
Perkins radiators of moderate sizes will operate on a gravity circulation hot water system. Sizes over 80 sq. ft. (steam rating) should only be used on a system in connection with forced circulation of water. In any hot water system proper provision for accumulating and venting air is essential and the air chamber formed of pipe nipples should be as large in volume as practical. Do not pitch radiator.



Piping for standard hot water system.



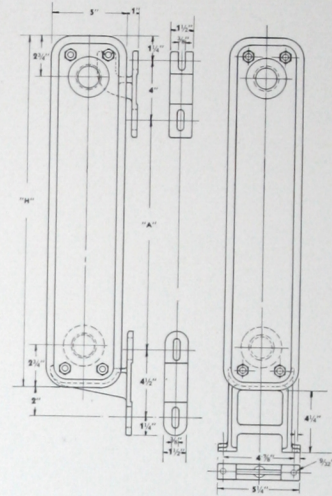
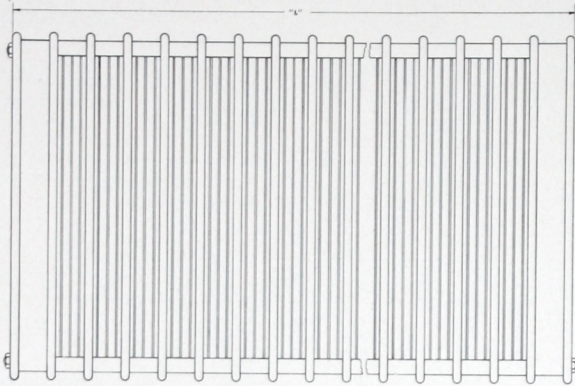
Piping for down flow hot water system.



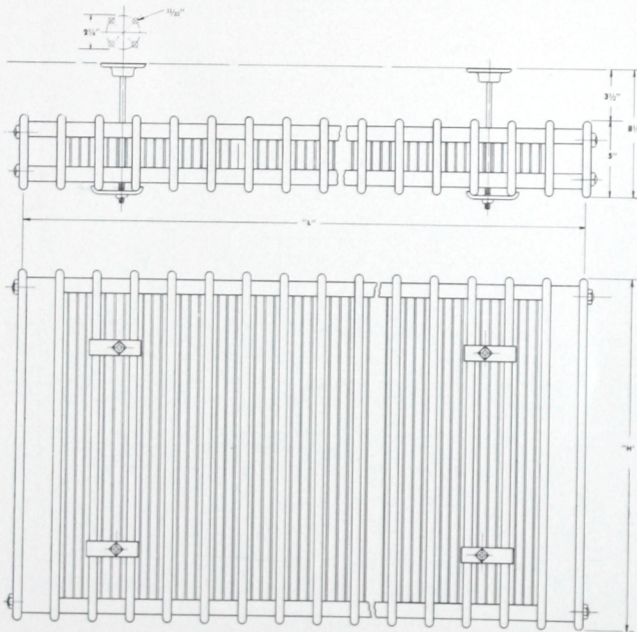
Air venting for ceiling installation.

PERKINS RADIATOR MEASUREMENTS

WALL MOUNTED INSTALLATION



CEILING MOUNTED INSTALLATION



GENERAL INFORMATION

Radiators are tapped 1" and can be bushed to $\frac{3}{4}$ " or $\frac{1}{2}$ " as specified. Perkins Radiator tappings are always located top and bottom, opposite ends. It is not necessary to specify tapping locations on orders as radiators are reversible front and back.

Radiators can be furnished with either attachable legs or wall brackets, as illustrated. Legs or brackets can be attached to any section of the radiator except the two extreme end sections. Special brackets are available for ceiling installations and these should be installed approximately $\frac{1}{5}$ of the radiator length from each end.

All radiators should be installed in level position. Do *not* pitch radiators for either steam or hot water service.

All Perkins Radiators are tested for a maximum operating pressure of 150 lbs.

All radiators are furnished in gray priming coat. For additional information address the nearest office.

Wall and Ceiling Mounted Radiators

Dimensions	14 $\frac{1}{2}$ "	23 $\frac{1}{2}$ "	32 $\frac{1}{2}$ "
A	6 $\frac{3}{4}$ "	15 $\frac{3}{4}$ "	24 $\frac{3}{4}$ "
H	14 $\frac{1}{2}$ "	23 $\frac{1}{2}$ "	32 $\frac{1}{2}$ "
L	See Page 18		

